Asheville Steam Electric Power Plant

Location:

- **Buncombe County, North Carolina**

Historic CCR Storage Areas:

- **1964 Ash Basin**
- **1982 Ash Basin**

Closure Option Selected:

- **Excavation**

I. History of CCR Management

Duke Energy Progress, LLC's ("DE Progress" or the "Company") Asheville Steam Electric Plant ("Asheville Plant") began commercial operations in 1964. The Asheville Plant's first ash basin ("1964 Ash Basin") was constructed to receive sluiced fly ash and bottom ash from the plant's original coal-fired unit. The 1964 Ash Basin underwent an expansion in 1971 by raising and expanding the dikes. The 1964 Ash Basin was taken out of service as it reached its capacity in 1982 and the impounded water from the basin was allowed to drain naturally.

DE Progress began construction of a second ash basin in 1981 and began operating that basin in 1982 ("1982 Ash Basin"). This basin provided additional ash storage capacity for the Asheville Plant. In 2005 an interior dike was constructed in the center of the 1982 Ash basin that divided the basin into two cells in order to facilitate settlement of bottom ash and lighter fly ash. In 2007, DE Progress began dredging and dewatering of the 1982 Ash Basin for the purpose of beneficially reusing the ash at the Asheville Regional Airport for structural fill.

II. Closure Plan

DE Progress' closure plan for the Asheville Plant's coal ash storage areas entails complete excavation of the 1964 and 1982 Ash Basins and transportation offsite for placement in a permitted landfill pursuant to state and federal regulatory requirements. Both ash basins are being excavated consistent with the federal CCR Rule. Both ash basins have also been designated by the North Carolina General Assembly as "high priority," which designation requires that they be excavated. *See* Senate Bill 729, Coal Ash Management Act (2014) and H.B. 630 (2016) (collectively, "CAMA").

In order to meet regulatory excavation deadlines and requirements, DE Progress contracted with Waste Management to transport ash from the 1982 Ash Basin to an offsite, lined

landfill near Homer, Georgia ("R&B Landfill") beginning in 2015. This ash consisted of the ash that had not already been excavated and transported to the Asheville Regional Airport for use as structural fill between 2007 and 2015. Additional ash was temporarily transported under a contract with Charah to a landfill at DE Carolinas' Cliffside Steam Station ("Cliffside Plant") in Mooresboro, North Carolina in 2016. Excavation of the 1982 Ash Basin was completed in September 2016. DE Progress began excavating ash from the 1964 Ash Basin and transporting it to the R&B Landfill beginning in 2016. DE Progress plans to construct a new combined cycle plant within the footprint of the 1982 Ash Basin while no plans have been finalized for use of the 1964 Ash Basin area .

III. Issues Addressed in the North Carolina Rate Proceeding

The issues surrounding the Company's selection of a closure option for the Asheville Plant site and the associated costs were fully litigated in the North Carolina rate proceeding, North Carolina Utilities Commission ("NCUC" or the "Commission) Docket No. E-2, Sub 1142.

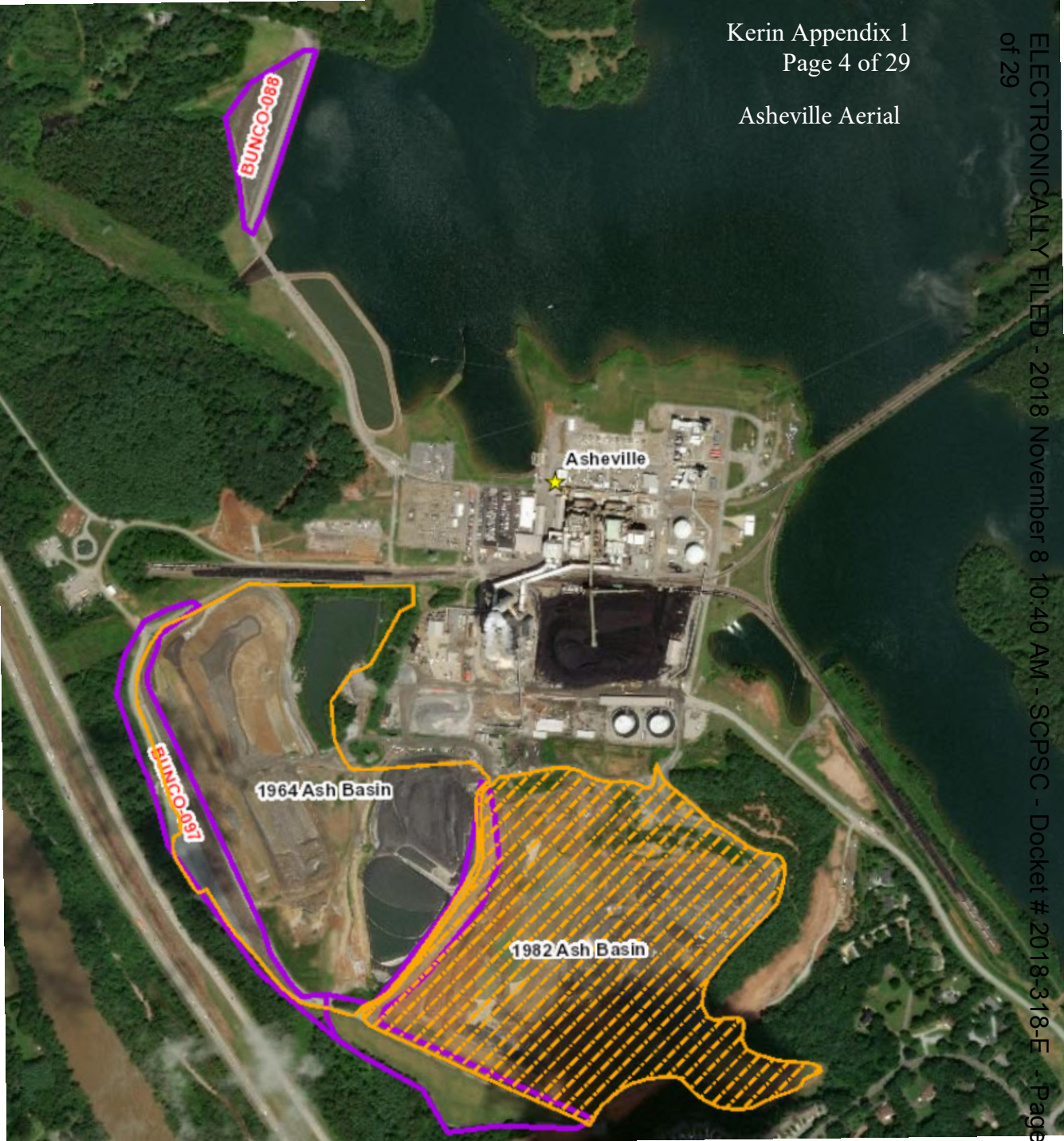
Witnesses for the Public Staff for the NCUC ("Public Staff") took exception to the Company's closure plan for the Asheville Plant. Specifically, the Public Staff objected to: (a) the schedule on which DE Progress removed the coal ash, which it argued resulted in the unnecessary double-handling of some coal ash on site; (b) the Company's decision to transport excavated coal ash to the R&B Landfill in Homer, Georgia, rather than transporting all of the excavated coal ash to a DE Progress- or DE Carolinas-owned facility, such as the DE Carolinas-owned Cliffside landfill; and (c) the per ton/mile rates paid by DE Progress to Charah to transport the material from the Asheville Plant to the Cliffside Plant landfill. The Public Staff further argued that the coal ash processing costs expended at the Asheville Plant relative to the amount of coal ash that had been removed offsite were unreasonable. Docket No. E-2, Sub 1142, Tr. Vol. 18, pp. 156-60. However, following the filing of rebuttal testimony by Company witness Jon Kerin, the Public Staff revised their testimony to indicate that it no longer took exception with the quantities of coal ash that had been removed from the 1982 Basin at the Asheville Plant to accommodate construction of a combined cycle facility. Instead, the Public Staff contended that a reasonable calculation for coal ash transporting costs should be based on the per-ton/mile rates calculated from the Waste Management, Inc. contract, but utilizing the shorter transporting distance and lower tipping or placement fee associated with the Cliffside landfill. In total and using this methodology, the Public Staff proposed a disallowance relating to the Asheville Plant of $29.3 million. *Id.* at pp. 173-176.

In the North Carolina Utility Commission's (the "Commission") *Order Accepting Stipulation, Deciding Contested Issues, and Granting Partial Rate Increase,* issued on February 23, 2018 in Docket No. E-2, Sub 1142 ("NCUC Order"), the Commission began its analysis by stating that the deadlines imposed by CAMA and the Mountain Energy Act of 2015 ("MEA") provide the overarching framework in assessing the prudence of the Company's decision to transport Asheville Plant CCR offsite. The Commission explained that the MEA, although extending the closure deadline to August 1, 2022, also required construction of a new combined cycle plant to be built on the site of one of the Asheville Plant's basins, which additionally required extensive construction laydown area necessary to allow efficient construction of the new plant. Quoting witness Kerin, the Commission stated that taking the two requirements of

the MEA together, the MEA "effectively made construction of a new on-site CCR landfill [at the Asheville Plant] technically infeasible given the short time period to replace the coal-fired generator by 2020, and close the coal ash basins by 2022," and rejected the Public Staff's arguments otherwise. NCUC Order at 186. The Commission concluded that although it "does not question the bona fides or expertise of [the Public Staff]," it does, however, determine "that witness Kerin has "lived" this project since its inception," and that the Commission therefore "relies on [witness Kerin's] testimony regarding the decisions made [by the Company], and determines that the [Public Staff's] adjustments … will not be adopted." *Id.* at 187.

As to the Public Staff's assertion that DE Progress exclusively should have utilized the Cliffside Plant landfill in lieu of the R&B Landfill due to its proximity and lower costs, the Commission again accepted the Company's argument that the Public Staff's proposed approach was infeasible. Specifically, the Commission "determine[d] that witness Kerin's testimony demonstrates that the Company's actions and real-time decisions regarding the Asheville site were in fact reasonable and prudent in the context of the requirement[s] of CAMA and the MEA, and that the costs, in the context of analysis the witnesses undertook, were in fact prudently incurred." *Id.* Therefore, no discrete disallowances proposed by the Public Staff relating to the Asheville Plant were approved by the Commission, with the exception of the increased contracted disposal costs with Waste Management, Inc. of $9.5 million, which the Company had previously agreed was an appropriate adjustment to its contractual coal ash moving expenses. *Id.*

Asheville Aerial



Cape Fear Plant

Location:

- **Chatham County, North Carolina**

Historic CCR Storage Areas:

- **1956 Ash Basin**
- **1963 Ash Basin**
- **1970 Ash Basin**
- **1978 Ash Basin**
- **1985 Ash Basin**

Closure Option Selected:

- **Onsite Beneficiation Project**

I. History of CCR Management

Duke Energy Progress, LLC's ("DE Progress") Cape Fear Steam Station ("Cape Fear Plant") began operations in 1923 and ceased power production in 2012. Electricity was generated from the Cape Fear Plant by coal-fired electric generation units. The plant added additional coal-fired units from 1923 to 1969. Two of the site's six coal-fired units were retired in 1977 and two in 2011. The remaining two coal-fired units, along with one of four oil-fueled combustion turbine units on site, were retired in October 2012.

Coal combustion residuals ("CCR") from the plant's coal-fired units were sluiced to and stored in five onsite ash basins, which are referenced using their date of construction: 1956, 1963, 1970, 1978, and 1985. Sluicing to the youngest ash basin, the 1985 Ash Basin, ceased in 2012. The 1956 Ash Basin is located north of the former power production area, and the remaining ash basins are located south of the former power production area. The 1963 and 1970 Ash Basins were constructed on the west side of the site adjacent to the Cape Fear River. The 1978 Ash Basin was constructed east of and abutting the 1963 and 1970 Ash Basins. The 1985 ash basin was constructed east of the existing ash basins.

II. Closure Plan

DE Progress will be excavating ash from all of its ash basins at the Cape Fear Plant pursuant to the North Carolina Coal Ash Management Act ("CAMA"). *See* N.C. S.B. 729 (2014) & H.B. 630 (2016). Ash that is excavated from the Cape Fear Plant basins will not be placed in an onsite or offsite CCR landfill, but will instead be processed through an onsite CCR beneficiation facility called a STAR® processing unit. The STAR® processing unit will be

constructed by SEFA Group Inc. and will be capable of processing 300,000 tons of CCR annually, as required by the North Carolina Coal Ash Management Act ("CAMA"). The STAR® unit will convert the CCRs into a material that will then be sold for beneficial use to the concrete industry.

The Cape Fear Plant is not currently subject to federal CCR Rule provisions requiring basin closure. However, in response to the United States Court of Appeals for the District of Columbia Circuit's August 21, 2018 decision in *USWAG v. EPA* (No. 15-1219), EPA is expected to undertake a rulemaking that would regulate inactive impoundments at closed power plants, including the basins at Cape Fear that were inactive as of the effective date of the CCR Rule.

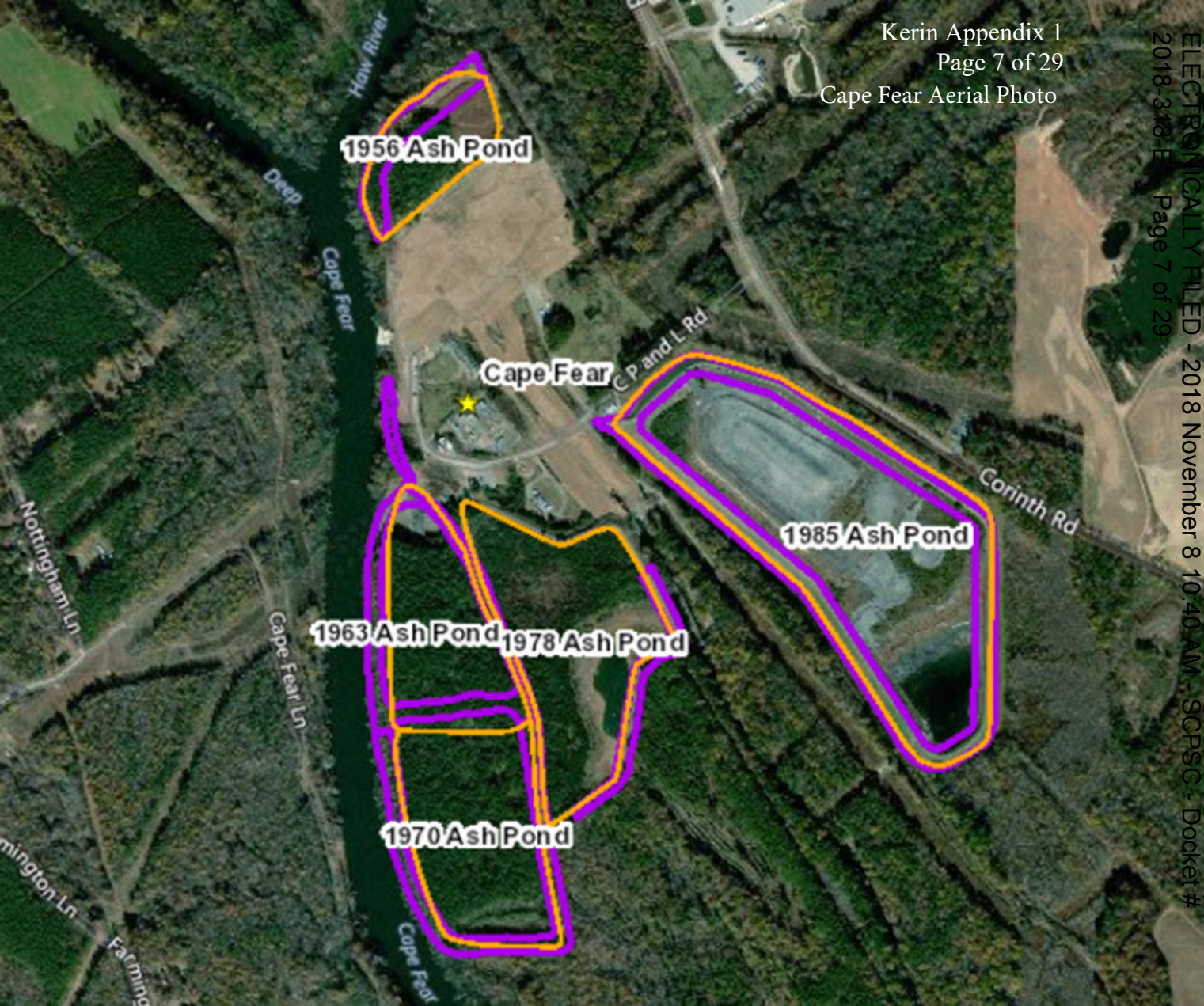
III. Issues Addressed in the North Carolina Rate Proceeding

The issues surrounding the Company's selection of a closure option for the Cape Fear Plant site and the associated costs were fully litigated in the North Carolina rate proceeding, North Carolina Utilities Commission ("NCUC" or the "Commission") Docket No. E-2, Sub 1142. No intervenor challenged DE Progress' selected closure method for the Cape Fear Plant; however, the Public Staff to the NCUC ("Public Staff") specifically addressed DE Progress' proposed costs relating to the Cape Fear Plant in its testimony.

The Public Staff stated that it did not take exception to DE Progress' selection of the Cape Fear Plant as one of the three required beneficiation sites pursuant to CAMA. The Public Staff noted that the timeframe proposed by DE Progress for beneficiation of "intermediate risk" sites, one of which is the Cape Fear Plant, extends beyond the closure timeframe outlined in Section 3.(a) of S.L. 2016-95; however, N.C. Gen. Stat. § 130A-309.215 provides a variance option for closure deadlines when doing so would be in the public interest. NCUC Docket No. E-2, Sub 1142, Tr. Vol. 159.

Company witness Jon Kerin testified that DE Progress will seek variances to any deadlines where doing so would be in the best interest of customers. The Company interprets N.C. Gen. Stat. § 130A-309.215 to mean that the North Carolina Department of Environmental Quality's variance-granting authority extends to the Cape Fear Plant. Tr. Vol. 20, pp. 33, 47-57.

Because no parties raised contentions as to DE Progress' proposed closure plan and related costs concerning the Cape Fear Plant, the Commission, in its *Order Accepting Stipulation, Deciding Contest Issues and Granting Partial Rate Increase,* issued on February 23, 2018 in Docket No. E-2, Sub 1142, did not disallow the Company's costs with respect to the Cape Fear Plant, and additionally rejected intervenor's claims that a general disallowance relating to all of the Company's coal ash plants be disallowed. *Id.* at 200-206.



H.F. Lee Plant

Location:

- **Wayne County, North Carolina**

Historic CCR Storage Areas:

- **Active Ash Basin**
- **Inactive Ash Basin 1**
- **Inactive Ash Basin 2**
- **Inactive Ash Basin 3**
- **Lay of Land Area**
- **Ash Fill Construction Road**
- **Cinder Waste Area**

Closure Option Selected:

- **Onsite Beneficiation Project**

I. History of CCR Management

Duke Energy Progress, LLC's ("DE Progress" or the "Company") H.F. Lee Energy Complex ("H.F. Lee Plant") is located in Goldsboro, Wayne County, North Carolina nearby the Neuse River. Operations began at the H.F. Lee Plant in 1951 as a coal-fired electricity generation plant. Over its life, the H.F. Lee Plant has employed various combinations of electric generation units to produce energy. From 1967 through 1971 four oil-fueled combustion turbine units were added to the facility. In 2000, five simple-cycle, duel fuel (oil and natural gas) units were built. The plant's coal-fired units were retired in September 2012, followed by the four turbine units in October 2012. A new combined cycle unit was brought on line in 2012.

Coal combustion residuals ("CCRs") from H.F. Lee's coal-fired units have been managed in the plant's three inactive ash basins ("Inactive Ash Basins 1-3"), the Active Ash Basin, a Lay of Land Area ("LOLA"), an ash fill construction road area, and a cinder waste area. Inactive Ash Basins 1-3 were built as three storage cells in approximately the late 1950s and early 1960s. Construction of the Active Ash Basin began in 1978 and was completed in April 1980. The Active Ash Basin stopped receiving sluiced CCRs in 2012 when the plant's coal-fired units were retired.

II. Closure Plan

DE Progress will be excavating ash from the Active Ash Basin at the H.F. Lee Plant pursuant to the federal CCR Rule and the North Carolina Coal Ash Management Act, N.C. S.B.

729 (2014) & H.B. 630 (2016) (collectively "CAMA"). Inactive Ash Basins 1-3 will also be excavated as required by CAMA. Ash that is excavated from the H.F. Lee Plant basins will not be placed in an onsite or offsite CCR landfill, but will instead be processed through an onsite CCR beneficiation facility called a STAR® processing unit. The STAR® processing unit will be constructed by SEFA Group Inc. and will be capable of processing 300,000 tons of CCR annually, as required by CAMA. *See* N.C. Gen. Stat. § 130A-309.216. The STAR® unit will convert the CCRs into a material that will then be sold for beneficial use to the concrete industry.

Regarding non-ash basin CCR disposal areas at the H.F. Lee Plant, DE Progress plans to excavate those areas and utilize the onsite STAR® unit to process the material. This is being done in accordance with a Settlement Agreement that was reached between DE Progress and the North Carolina Department of Environmental Quality and pursuant to state regulatory requirements.

III. Issues Addressed in the North Carolina Rate Proceeding

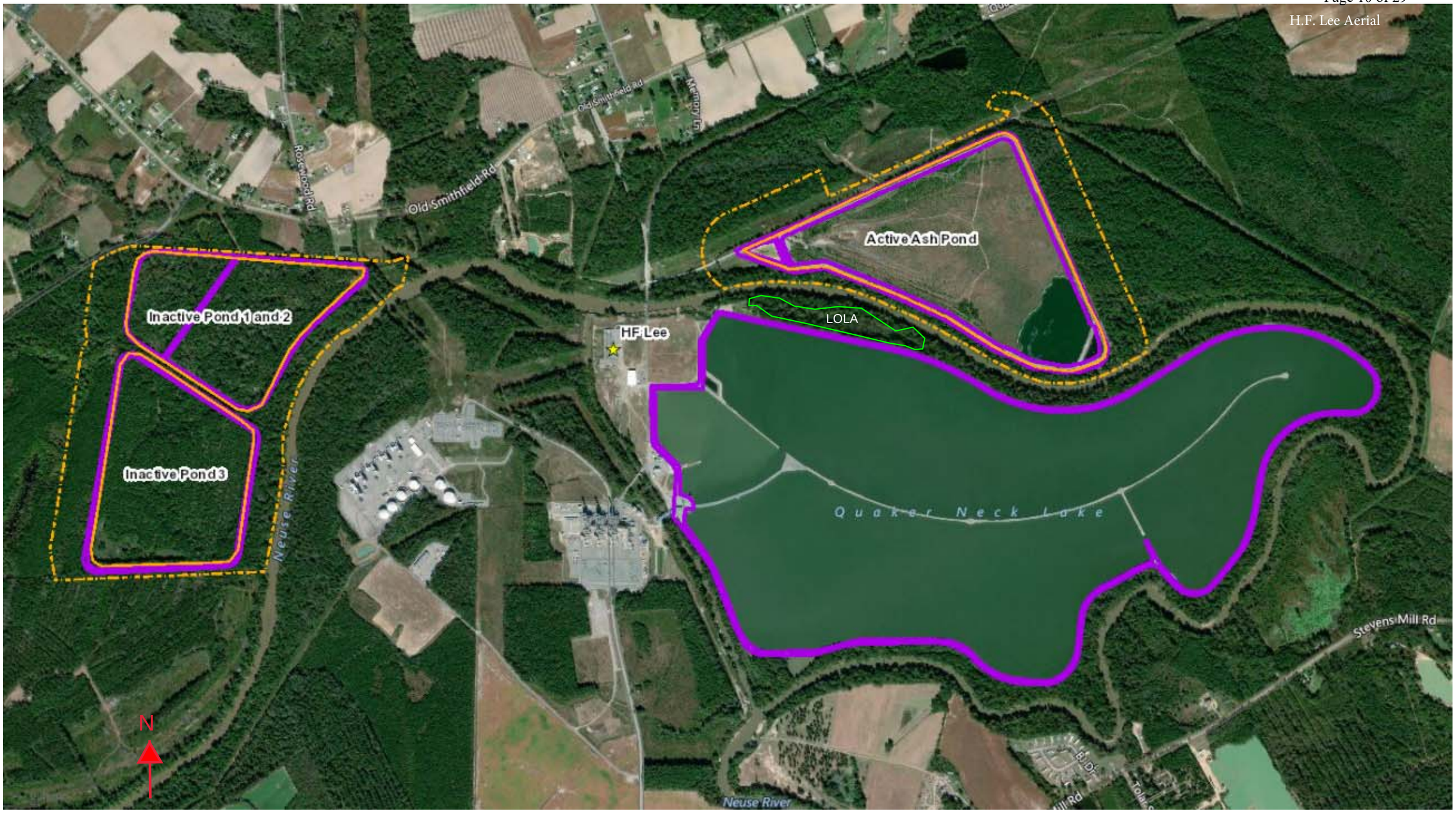
The issues surrounding the Company's selection of a closure option for the H.F. Lee Plant site and the associated costs were fully litigated in the North Carolina rate proceeding, North Carolina Utilities Commission ("NCUC" or the "Commission") Docket No. E-2, Sub 1142. No intervenor challenged DE Progress' selected closure method for the H.F. Lee Plant; however, the Public Staff to the NCUC ("Public Staff") specifically addressed DE Progress' proposed costs relating to the H.F. Lee Plant in its testimony.

The Public Staff stated that it did not take exception to DE Progress' selection of the H.F. Lee Plant as one of the three required beneficiation sites pursuant to CAMA. The Public Staff noted that the timeframe proposed by DE Progress for beneficiation of "intermediate risk" sites, one of which is the H.F. Lee Plant, extends beyond the closure timeframe outlined in Section 3.(a) of S.L. 2016-95; however, N.C. Gen. Stat. § 130A-309.215 provides a variance option for closure deadlines when doing so would be in the public interest. NCUC Docket No. E-2, Sub 1142, Tr. Vol. 159.

Company witness Jon Kerin testified that DE Progress will seek variances to any deadlines where doing so would be in the best interest of customers. The Company interprets N.C. Gen. Stat. § 130A-309.215 to mean that the North Carolina Department of Environmental Quality's variance-granting authority extends to the H.F. Lee Plant. Tr. Vol. 20, pp. 33, 47-57.

Because no parties raised specific contentions as to DE Progress' proposed closure plan and related costs concerning the H.F. Lee Plant, the Commission, in its *Order Accepting Stipulation, Deciding Contest Issues and Granting Partial Rate Increase,* issued on February 23, 2018 in Docket No. E-2, Sub 1142, did not disallow the Company's costs with respect to the H.F. Lee Plant, and additionally rejected intervenor's claims that a general disallowance relating to all of the Company's coal ash plants be disallowed. *Id.* at 200-206.

H.F. Lee Aerial



Note:
1. Base figure from Duke Energy GIS Mapping Operations (GISMO).
2. This is not a surveyed drawing. Locations and boundaries are approximate and are intended as a visual aid only.

Mayo Plant

Location:

- **Roxboro, Person County, North Carolina**

Historic CCR Storage Areas:

- **Ash Basin**
- **FGD Forward Flush Pond**
- **Settling Basin Pond**
- **CCP Monofill**

Closure Option Selected:

- **Cap-in-place**

I. History of CCR Management

Duke Energy Progress, LLC's ("DE Progress" or the "Company") Mayo Steam Station ("Mayo Plant") is located in Person County, North Carolina approximately 10 miles northeast of Roxboro. DE Progress began commercial operations in 1983. The Mayo Plant's Ash Basin was constructed in 1982 to received coal combustion residuals ("CCR") from the plant's coal-fired generation unit. The site also has a flue-gas desulfurization ("FGD") flush pond and settling basin, which were constructed between 2008 and 2009 within the footprint of the Ash Basin. In 2013, the Mayo Plant converted from a wet ash system (sluicing) to a dry ash system. During the conversion and until November 2014, CCR were transported to a lined landfill located at the Roxboro Plant. Since November 2014, CCR have been placed in an onsite coal combustion product monofill ("CCP Monofill") that was constructed between 2012 and 2014. The CCP Monofill was constructed with an engineered liner and is permitted to receive fly ash, bottom ash, gypsum, and other CCR. Phase 1 of 11 of the CCP Monofill is currently in operation.

II. Closure Plan

DE Progress' closure plan for the Mayo Plant entails closing the Ash Basin in place, which will include the FGD Pond and the Settling Basin Pond, pursuant to state and federal regulatory requirements. *See* 80 Fed. Reg. 21301; North Carolina Coal Ash Management Act ("CAMA"), S.B. 729 (2014) & H.B. 630 (2016). This closure method is also referred to as the "cap-in-place" closure method. Under CAMA, the North Carolina Department of Environmental Quality ("NC DEQ") classified the Mayo Plant as an "intermediate risk" site. However, DE Progress is in the process of establishing replacement water supplies to neighboring properties and performing dam safety repair work that will make the site eligible for "low risk"

classification under CAMA. A "low risk" classification will allow the Company to pursue a cap-in-place closure method for the Mayo Plant as described in the federal CCR Rule.

The cap-in-place closure method to close the Ash Basin, the FGD pond, and Settling Basin Pond will require: removal and treatment of the bulk water/free liquids; interstitial/pore dewatering (as needed) and treatment; stabilization of remaining CCR materials sufficient to support the final cover system; grading of in-place CCR materials to promote positive drainage (no ponding) and prevent sloughing or movement of the final cover system; installation of a final cover system, including stormwater management controls; partial lowering of the dam; and post-closure groundwater monitoring and cover system maintenance. *See* 40 C.F.R. § 257.102(d).

DE Progress' closure plan for the Mayo Plant, as described above, must be approved by NC DEQ. DE Progress expects a decision from NC DEQ on the Mayo Plant closure plan in 2020.

III. Issues Addressed in the North Carolina Rate Proceeding

In DE Progress' North Carolina rate proceeding before the North Carolina Utilities Commission (the "Commission" or "NCUC"), Docket No. E-2, Sub 1142, the Company explained its closure plans for the Mayo Plant site and proposed recovery of certain costs related to coal ash management and closure at the site. Only one intervenor, the Sierra Club, took issue with DE Progress' proposed closure plans for the Mayo Plant. The Public Staff of the NCUC, on the other hand, argued that review of the Company's closure plan for the Mayo Plant was premature.

The Sierra Club disagreed with DE Progress' selection of the cap-in-place closure method for the Mayo Plant. The Sierra Club asserted that continued storage of coal ash at the Mayo Plant poses significant environmental risks, and that removal of coal ash from the Ash Basin would be more protective of the environment. The Sierra Club contended that DE Progress' Mayo closure plans of closure in place violate the CCR Rule, and that DE Progress' proposed run rate, based upon the assumption that ash ponds at Mayo will be in place, is unreasonable and should be rejected. The Sierra Club also asserted that all of the coal ash closure costs proposed by the Company for cost recovery relating to the Mayo Plant are the result of unlawful discharges from the unlined Ash Basin and are therefore not recoverable by law. NCUC Docket No. E-2, Sub 1142, Tr. Vol. 13, pp. 132-73, 175- 77.

On cross-examination, however, the witness for the Sierra Club conceded that excavation and moving the coal ash at the Mayo Plant to lined landfills would increase the cost for closure. The Sierra Club also admitted that their evaluation of the Company's Mayo Plant closure plans was conducted from a distance rather than by interaction with the Company. The Sierra Club agreed with the Company that the CCR Rule was not the first time that the Environmental Protection Agency ("EPA") discovered that utilities nationwide were using unlined wet coal ash basins, and that while the EPA was studying the issue at least as early as the 1980s, it took action to regulate coal ash basins only a few years ago, and in doing so recognized that utilities have been permitted to dispose of coal ash in unlined basins. Tr. Vol. 13, pp. 132-204.

The Public Staff did not recommend any specific disallowances to the Company's proposed cost recovery relating to the Mayo Plant. The Public Staff argued that, since CAMA does not require the submission of proposed closure plans for low and intermediate risk impoundments until December 31, 2019, a prudence review of the Mayo Plant's closure plans at this time would be premature. The Public Staff therefore took no exception in the case to DE Progress' current proposed closure method for the coal ash basins located at the Mayo Plant. Tr. Vol. 18, pp. 139-41.

The Commission in its *Order Accepting Stipulation, Deciding Contested Issues, and Granting Partial Rate Increase,* at 218, Docket No. E-2, Sub 1142 (Jun. 22, 2018) ("NCUC Order"), first rejected the Public Staff's argument that because DE Carolinas was not yet required to submit its closure plans for Mayo to DEQ until 2019, review of the Mayo Plant was immature. Specifically, with respect to pending determinations by DEQ, the NCUC stated that they would not "delay [their] work in order to wait for [the] agenc[y] to complete their work," and concluded that review of Mayo was proper at this time and that CCR cost recovery would not be provisional. NCUC Order at 218.

In reviewing the testimony put forward by the Company and intervenors regarding the closure plan and associated costs for the Mayo Plant, the Commission stated that it was "not persuaded" by the evidence presented by the Sierra Club. NCUC Order at 198. Thus, the Commission declined to direct DE Progress to pursue any particular closure plans at the Mayo Plant. The Commission also disagreed with the Sierra Club's assertion that all of the coal ash closure costs relating to the Mayo Plant were a result of unlawful discharges and therefore not recoverable. Specifically, the Commission concluded that the costs being incurred at the Mayo Plant were not resulting from unlawful discharge, but were incurred from compliance with the federal CCR Rule and CAMA. *Id.*

Mayo Aerial

Note:
1. Base figure from Duke Energy GIS Mapping Operations (GISMO).
2. This is not a surveyed drawing. Locations and boundaries are approximate and are intended as a visual aid only.

Robinson Steam Electric Plant

Location:

- **Darlington County, South Carolina**

Historic CCR Storage Areas:

- **1960 Fill Area**
- **Unit 1 Ash Basin**

Closure Option Selected:

- **Excavation**

I. History of CCR Management

Duke Energy Progress, LLC's ("DE Progress" or the "Company")) Robinson Steam Electric Plant ("Robinson Plant") is located near Hartsville in Darlington County, South Carolina. Construction of the Robinson Plant began in the late 1950s when Black Creek was impounded to create Lake Robinson and the facility's coal-fired unit ("Unit 1") was built. The Robinson Plant began commercial operations in 1960 when Unit 1 was brought on line. In 1971, the Company added a 724 MW nuclear unit to the site. DE Progress also owns and operates the Darlington Electric Power Plant, which is located just north of the Robinson Plant and consists of thirteen natural gas units. The Robinson Plant's lone coal-fired unit was retired in 2012.

Over the life of the Robinson Plant, coal combustion residuals ("CCR") from Unit 1 were stored in either the 1960 Fill Area or the onsite ash basin ("Unit 1 Ash Basin"). From 1960 to the mid-1970s, CCR from Unit 1 were placed in the 1960 Fill Area. The 1960 Fill Area received CCR from Unit 1 until the Unit 1 Ash Basin was constructed in the mid-1970s by damming an unnamed tributary to Black Creek. The Unit 1 Ash Basin received sluiced CCR until Unit 1 was retired in 2012.

II. Closure Plan

DE Progress' closure plan for the Robinson Plant entails complete excavation of the 1960 Fill Area and the Unit 1 Ash Basin pursuant to South Carolina and federal regulatory requirements. The Company entered a Consent Agreement (15-23-HW) with the South Carolina Department of Health and Environmental Control ("SCDHEC") on July 15, 2015, whereby it agreed to excavate CCR from the 1960 Fill Area and Unit 1 Ash Basin. The Company also agreed that the excavated CCR would have to be placed in a lined, permitted landfill that meets the requirements of the federal CCR Rule. The Consent Agreement contemplated that DE

Progress would obtain the required permits to construct an onsite landfill at either the Darlington Electric Power Plant or the Robinson Plant. The Company is proceeding with construction of a CCR landfill at the Darlington Electric Power Plant to receive the excavated CCR from the Robinson Plant.

III. Issues Addressed in the North Carolina Rate Proceeding

The issues surrounding the Company's selection of a closure option for the Robinson Plant site and the associated costs were fully litigated in the North Carolina rate proceeding, North Carolina Utilities Commission ("NCUC" or the "Commission") Docket No. E-2, Sub 1142. Notably, neither the Public Staff for the NCUC ("Public Staff") nor the intervenors in the case opposed DE Progress' closure plans or costs associated with the Robinson Plant, and therefore there were no recommended disallowances to DE Progress' proposed cost-recovery relating to the Robinson Plant.

During the proceeding Company witness Jon Kerin explained DE Progress' obligations under South Carolina and federal regulatory requirements. These requirements include compliance with the Robinson Plant Consent Order and the federal CCR Rule. NCUC Docket No. E-2, Sub 1142, Tr. Vol. 16, p. 133.

The Commission accepted DE Progress' ash management and closure plan with respect to the Robinson Plant as reasonable and prudent. *Order Accepting Stipulation, Deciding Contested Issues and Granting Partial Rate Increase,* at 184-188, Docket No. E-2, Sub 1142 (Feb. 21, 2018).

Roxboro Plant

Location:

- **Person County, North Carolina**

Historic CCR Storage Areas:

- **East Ash Basin**
- **West Ash Basin**
- **East Settling Pond**
- **West Settling Pond**
- **FGD Flush Pond**
- **Roxboro Industrial Landfill**

Closure Option Selected:

- **Cap-in-place**

I. History of CCR Management

Duke Energy Progress, LLC's ("DE Progress" or the "Company") Roxboro Steam Station ("Roxboro Plant") is an active coal-fired electric generation facility located in Person County, North Carolina adjacent to Hyco Lake. The Roxboro Plant began commercial operations in 1966. The Roxboro Plant currently has four coal-fired generating units in service.

The Roxboro Plant has two ash basins. The oldest ash basin at this site is the East Ash Basin, which was constructed in 1963, prior to the plant becoming operational. The East Ash Basin was constructed to receive sluiced coal combustion residuals ("CCR") from the plant's coal-fired units. The East Ash Basin was vertically expanded in 1973. Also in 1973, the Company constructed the West Ash Basin by damming a portion of Sargents Creek. In 1983, the East Ash Basin reached capacity and was taken out of service.

In 1988, the Company converted the Roxboro Plant to dry ash handling and brought into service an onsite, partially lined coal ash monofill known as the Roxoboro Industrial Landfill. The Roxboro Industrial Landfill was constructed partially within the footprint of the inactive East Ash Basin and is permitted to receive bottom ash, fly ash, gypsum and other CCR.

In 2008, the Company completed construction of the West Settling Pond and flue gas desulfurization ("FGD") Flush Pond. In 2011, the Company completed construction of the East Settling Pond. These ponds were constructed to receive scrubber wastewater from the facility's FGD technology, which was installed in the coal-fired units to reduce emissions of sulfur

dioxide. The Company continues to operate the 2,422 MW Roxboro Plant, which is one of the largest power plants in the country.

II. Closure Plan

DE Progress' closure plan for the Roxboro Plant entails closing the West Ash Basin, including the FGD Ponds, and the East Ash Basin in place, pursuant to state and federal regulatory requirements. 80 Fed. Reg. 21301 (CCR Rule); North Carolina Coal Ash Management Act ("CAMA"), S.B. 729 (2014) & H.B. 630 (2016). This closure method is also referred to as the "cap-in-place" closure method. Under CAMA, the North Carolina Department of Environmental Quality ("NC DEQ") classified the Roxboro Plant as an "intermediate risk" site. However, DE Progress is in the process of establishing replacement water supplies to neighboring properties and performing dam safety repair work that will make the site eligible for "low risk" classification under CAMA. A "low risk" classification will allow the Company to pursue a cap-in-place closure method for the Roxboro Plant as described in the federal CCR Rule.

The cap-in-place closure method to close the West Ash Basin and the East Ash Basin will require: removal and treatment of the bulk water/free liquids; interstitial/pore dewatering (as needed) and treatment; stabilization of remaining CCR materials sufficient to support the final cover system; grading of in-place CCR materials to promote positive drainage (no ponding) and prevent sloughing or movement of the final cover system; installation of a final cover system, including stormwater management controls; partial lowering of the dam; and post-closure groundwater monitoring and cover system maintenance. *See* 40 C.F.R. § 257.102(d).

DE Progress' closure plan for the Roxboro Plant, as described above, must be approved by NC DEQ. DE Progress expects a decision from NC DEQ on the Roxboro Plant closure plan in 2020.

III. Issues Addressed in the North Carolina Rate Proceeding

In DE Progress' North Carolina rate proceeding before the North Carolina Utilities Commission (the "Commission" or "NCUC"), Docket No. E-2, Sub 1142, the Company explained its closure plans for the Roxboro Plant site and proposed recovery of certain costs related to coal ash management and closure at the site. Only one intervenor, the Sierra Club, took issue with DE Progress' proposed closure plans for the Roxboro Plant. The Public Staff of the NCUC argued that review of the Company's closure plan for the Roxboro Plant was premature.

The Sierra Club disagreed with DE Progress' selection of the cap-in-place closure method for the Roxboro Plant. The Sierra Club asserted that continued storage of coal ash at the Roxboro Plant poses significant environmental risks, and that removal of coal ash from the East Ash Basin and the West Ash Basin would be more protective of the environment. The Sierra Club contended that DE Progress' Roxboro closure plans of closure in place violate the CCR Rule, and that DE Progress' proposed run rate, based upon the assumption that ash ponds at Roxboro will be in place, is unreasonable and should be rejected. The Sierra Club also asserted that all of

the coal ash closure costs proposed by the Company for cost recovery relating to the Roxboro Plant are the result of unlawful discharges from the unlined ash basins and are therefore not recoverable by law. NCUC Docket No. E-2, Sub 1142, Tr. Vol. 13, pp. 132-73, 175-77.

On cross-examination, however, the witness for the Sierra Club conceded that excavation and moving the coal ash at the Roxboro Plant to lined landfills would increase the cost for closure. The Sierra Club also admitted that their evaluation of the Company's Roxboro Plant closure plans was conducted from a distance rather than by interaction with the Company. The Sierra Club agreed with the Company that the CCR Rule was not the first time that the Environmental Protection Agency ("EPA") discovered that utilities nationwide were using unlined wet coal ash basins, and that while the EPA was studying the issue at least as early as the 1980s, it took action to regulate coal ash basins only a few years ago, and in doing so recognized that utilities have been permitted to dispose of coal ash in unlined basins. Tr. Vol. 13, pp. 132-204.

The Public Staff did not recommend any specific disallowances to the Company's proposed cost recovery relating to the Roxboro Plant. The Public Staff argued that, since CAMA does not require the submission of proposed closure plans for low and intermediate risk impoundments until December 31, 2019, a prudence review of the Roxboro Plant's closure plans at this time would be premature. The Public Staff therefore took no exception in the case to DE Progress' current proposed closure method for the coal ash basins located at the Roxboro Plant. *Id.* at Tr. Vol. 18, pp. 139-41.

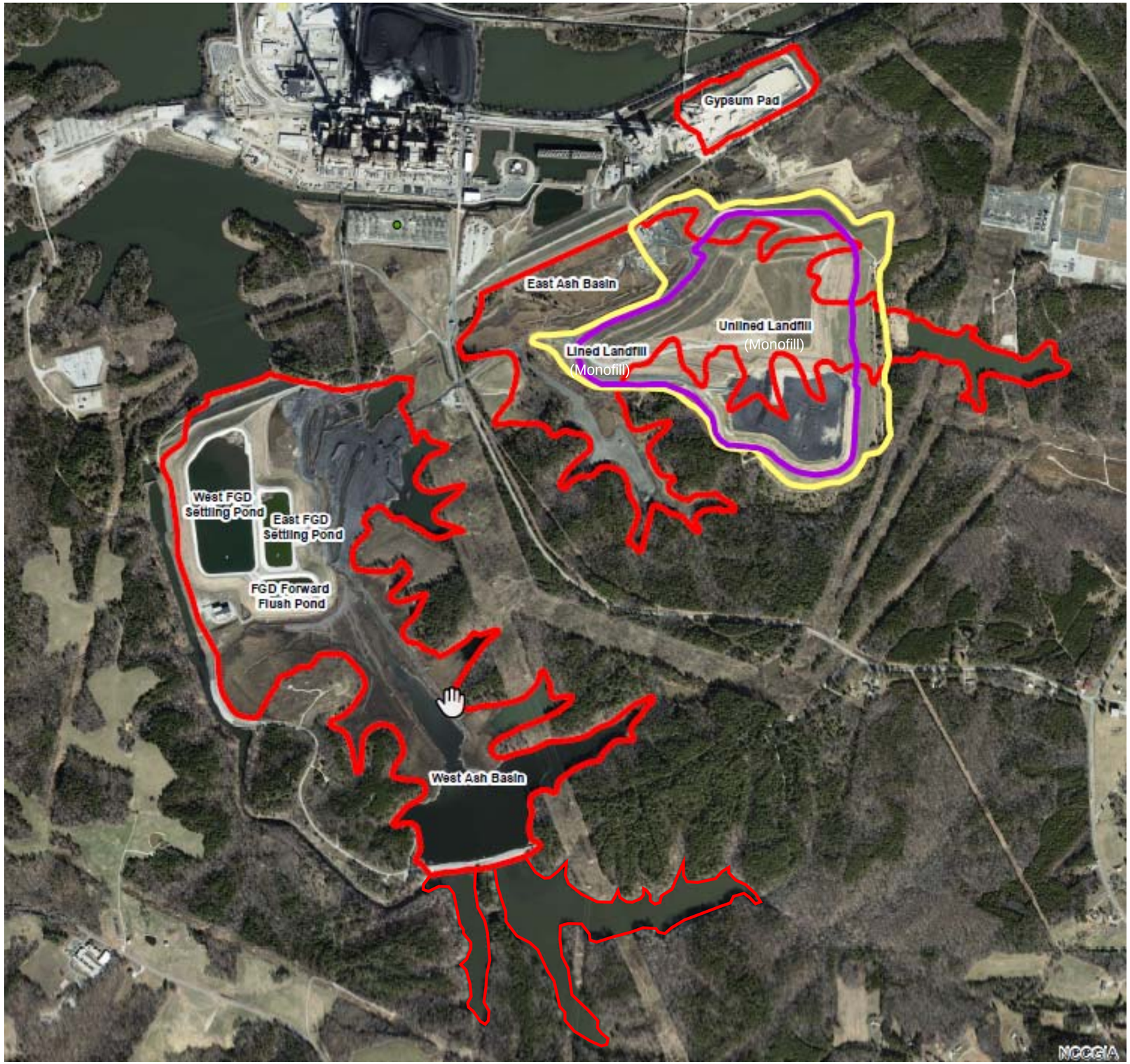
The Commission in its *Order Accepting Stipulation, Deciding Contested Issues, and Granting Partial Rate Increase,* at 218, Docket No. E-2, Sub 1142 (Jun. 22, 2018) ("NCUC Order"), first rejected the Public Staff's argument that because DE Carolinas was not yet required to submit its closure plans for Roxboro to DEQ until 2019, review of the Roxboro Plant was immature. Specifically, with respect to pending determinations by DEQ, the NCUC stated that they would not "delay [their] work in order to wait for [the] agenc[y] to complete their work," and concluded that review of Roxboro was proper at this time and that CCR cost recovery would not be provisional. NCUC Order at 218.

Additionally, in reviewing the testimony put forward by the Company and intervenors regarding the closure plan and associated costs for the Roxboro Plant, the Commission stated that it was "not persuaded" by the evidence presented by the Sierra Club. NCUC Order at 198. Thus, the Commission declined to direct DE Progress to pursue any particular closure plans at the Roxboro Plant. The Commission also disagreed with the Sierra Club's assertion that all of the coal ash closure costs relating to the Roxboro Plant were a result of unlawful discharges and therefore not recoverable. Specifically, the Commission concluded that the costs being incurred at the Roxboro Plant were not resulting from unlawful discharge, but were incurred from compliance with the federal CCR Rule and CAMA. *Id.*

Roxboro Aerial

N

Note:
1. Base figure from Duke Energy GIS Mapping Operations (GISMO).
2. This is not a surveyed drawing. Locations and boundaries are approximate and are intended as a visual aid only.



Sutton Plant

Location:

- **New Hanover County , North Carolina**

Historic CCR Storage Areas:

- **1971 Ash Basin**
- **1984 Ash Basin**
- **Lay of Land Area**

Closure Option Selected:

- **Excavation**

I. History of CCR Management

Duke Energy Progress, LLC's ("DE Progress" or the "Company") L.V. Sutton Plant ("Sutton Plant") began generating coal-fired electricity in 1954. From 1954 to 1971, the Company disposed of coal combustion residuals ("CCR") from its coal-fired unit in the Lay of Land Area ("LOLA") located onsite. In 1971, the Company constructed the first ash basin at the site to receive sluiced bottom and fly ash for storage and disposal. In 1983, the Company expanded storage capacity of the 1971 Ash basin by raising its dikes. Since this vertical expansion, this original ash basin has been known interchangeably as the 1971 Ash Basin or 1983 Ash Basin or 1971/1983 Ash Basin.

In 1984, the Company constructed a clay-lined second ash basin at Sutton Plant located north of the 1971 Basin and known as the 1984 Ash Basin. In 2006, a portion of the 1984 Basin was partitioned into two areas to create additional storage capacity.

The coal-fired units at the Sutton Plant were retired in 2013 and demolished in 2017. They were replaced by a 625 MW natural gas combined-cycle plant that has been operating since 2013.

II. Closure Plan

DE Progress' closure plan for Sutton's coal ash units entails complete excavation of the 1971 and 1984 Basins as well as excavation of CCR from the LOLA. The ash basins are being excavated consistent with the federal CCR Rule. Both ash basins have also been designated by the North Carolina General Assembly as "high priority," requiring that they be excavated. *See* Senate Bill 729, Coal Ash Management Act (2014) and H.B. 630 (2016) (collectively, "CAMA"). The LOLA is being excavated pursuant to a state court order.

The CCR Rule and CAMA both require that excavated ash be placed in a lined CCR landfill. DE Progress has selected an onsite CCR landfill for excavated ash disposal. Because of planning and permitting uncertainties and in order to ensure that the Company met its closure deadlines, the Company promptly started excavating and transporting ash offsite from Sutton while the planning and permitting process for the onsite landfill could progress. The Company contracted with Charah Inc. to transport this ash by truck and rail offsite to Brickhaven mine in Moncure, Chatham County, North Carolina to be reused as structural fill. DE Progress received its permit to construct the onsite CCR landfill from the North Carolina Department of Environmental Quality in September 2016. Construction on the CCR landfill began in October 2016 and the Company began placing excavated ash into the CCR Landfill on July 7, 2017. Ash placed in the CCR Landfill will include ash from the 1971 Basin, the 1984 Basin, and the LOLA.

III. Issues Addressed in the North Carolina Rate Proceeding

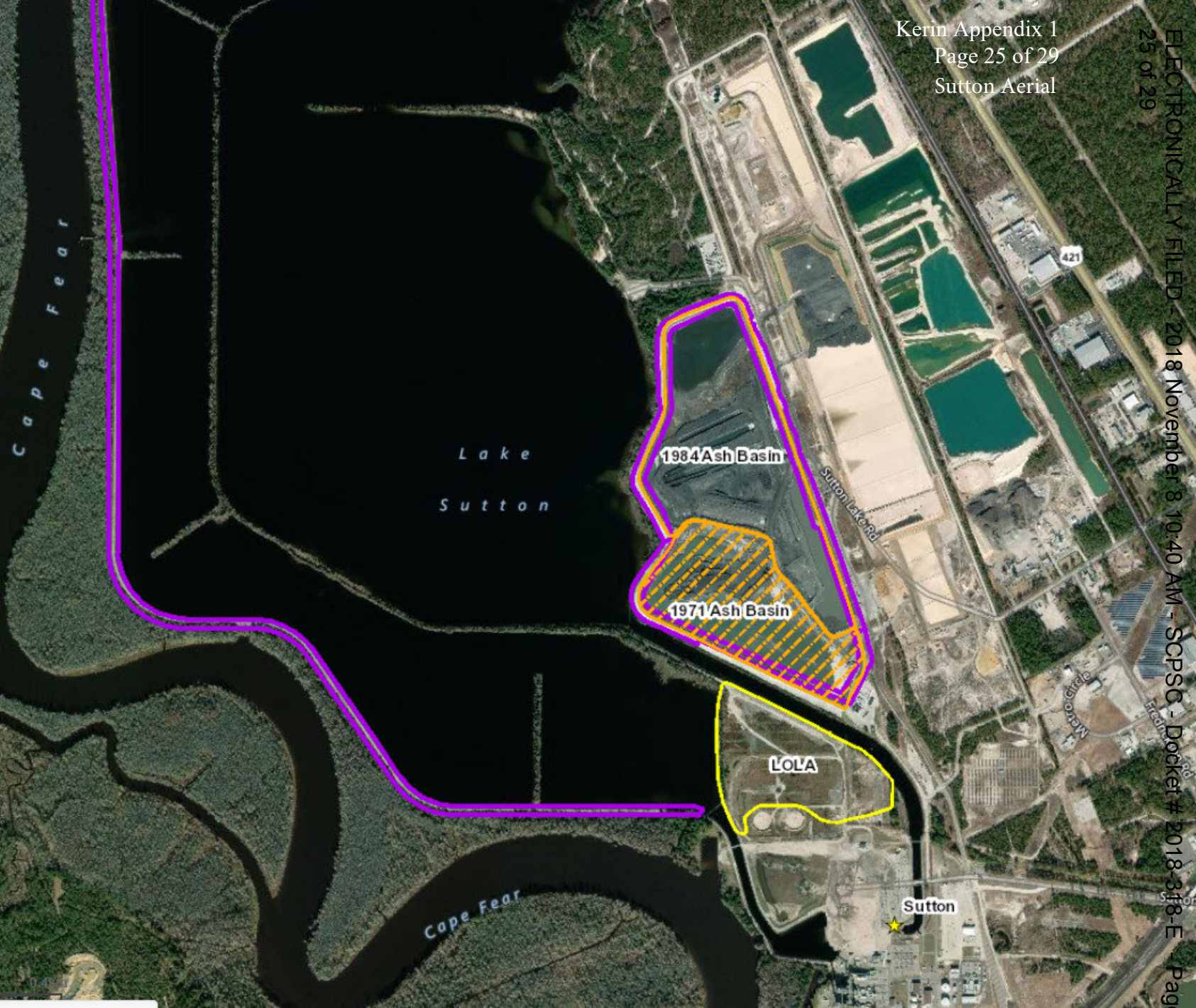
The issues surrounding the Company's selection of a closure option for Sutton and the associated costs were fully litigated in the North Carolina rate proceeding, North Carolina Utilities Commission ("NCUC" or the "Commission") Docket No. E-2, Sub 1142.

Witnesses for the Public Staff of the North Carolina Utilities Commission ("Public Staff") took exception with DE Progress' decision to excavate and transport coal ash offsite to the Brickhaven structural fill facility in Chatham County, North Carolina. The Public Staff argued that had DE Progress expeditiously pursued an onsite industrial landfill at the time it began planning for and transporting ash to Brickhaven, it could have disposed of all of the coal ash on-site without incurring the added expense associated with the off-site transfer and disposal. Tr. Vol. 18, pp. 145-88.

Additionally, the Public Staff took exception with DE Progress' inclusion of costs associated with two specific liner components that were included in the Company's current onsite landfill construction contract. They argued that these secondary layers exceed what is required under federal and state regulations. Tr. Vol. 18, p. 154. As a result of the Company's actions to transport coal ash offsite from the Sutton Plant and to install landfill liner components that exceeded regulatory requirements, the Public Staff recommended a total disallowance of $80.5 million from DE Progress' coal ash expenditures at the Sutton Plant during the recovery period. *Order Accepting Stipulation, Deciding Contested Issues, and Granting Partial Rate Increase* at 160, Docket No. E-2, Sub 1142 (Feb. 23, 2018) ("*DE Progress NCUC Order")*.

In the *DE Progress NCUC Order,* the North Carolina Utilities Commission (the "Commission") accepted Company witness Jon Kerin's assertions that the Public Staff's proposed timeline for excavation at the Sutton Plant "was a 'perfect world' scenario without due consideration of the inherent uncertainty of permitting any type of landfill, especially a CCR landfill, particularly during the regulatory and political environment of 2014." *NCUC Order* at 185. The Commission rejected the Public Staff's requested cost disallowance, and found the Company's Sutton Plant closure plan to be reasonable and prudent in light of the stringent CAMA deadlines and experienced delays in obtaining permits. Additionally, the Commission rejected the Public Staff's disallowance related to the two landfill liners, and instead agreed with

witness Kerin's explanation that use of the liners was required to effectively monitor the new landfill separate and apart from any influence caused by the immediately adjacent, older coal ash basin. *Id.* at 186.



Kerin Appendix 1
Docket No. 2018-318-E

Weatherspoon Steam Electric Plant

Location:

- **Robeson County, North Carolina**

Historic CCR Storage Areas:

- **1979 Ash Basin**

Closure Option Selected:

- **Excavation and beneficiation**

I. History of CCR Management

Duke Energy Progress, LLC's ("DE Progress" or the "Company") Weatherspoon Steam Electric Plant ("Weatherspoon Plant") is located within two miles of the Lumber River in Lumberton, Robeson County, North Carolina. The Weatherspoon Plant began commercial operations in 1949 when its first coal-fired electric generation unit went on line. The initial ash basin at the site was constructed in 1955 to receive sluiced coal combustion residuals ("CCR") from the plant's coal unit. The ash basin was then expanded twice, in 1963 and 1979, respectively. The 1979 expansion brought the basin to its modern-day size, which is why the basin is known as the 1979 Ash Basin. The 1979 Ash Basin underwent two subsequent vertical expansions. In 2002, a dry stack disposal area was constructed in the north end of the ash basin. In 2007, a vertical expansion was constructed southeast of the dry stack area within the 1979 Ash Basin. The Weatherspoon Plant ceased use of coal-fired electric generation units and stopped sluicing CCRs to the 1979 Ash Basin in 2011.

II. Closure Plan

DE Progress' closure plan for Weatherspoon Plant entails complete excavation of the 1979 Ash Basin pursuant to federal and North Carolina regulatory requirements. *See* 80 Fed. Reg. 21301 (CCR Rule); North Carolina Coal Ash Management Act ("CAMA"), S.B. 729 (2014) & H.B. 630 (2016). The approximately 2.4 million tons of CCR at the site will be excavated and transported by truck and sold to customers in South Carolina for beneficial use in the cement industry. DE Progress has contracted with Converse & Company to handle the transportation of excavated CCR. The Weatherspoon Plant will be capable of providing 230,000 to 250,000 tons per year of CCR for a period of ten years. Excavation and shipment of ash for beneficial use from the Weatherspoon Plant began in 2017.

III. Issues Addressed in the North Carolina Rate Proceeding

Kerin Appendix 1
Docket No. 2018-318-E

The issues surrounding the Company's selection of a closure option for the Weatherspoon Plant site and the associated costs were litigated in the North Carolina rate proceeding, North Carolina Utilities Commission ("NCUC" or the "Commission") Docket No. E-2, Sub 1142.

The Public Staff of the NCUC ("Public Staff") did not object to DE Progress' chosen closure method for the 1979 Ash Basin located at Weatherspoon. They noted that this option appears to offer a lower cost than other closure options for the site. However, because of the lower cost, the Public Staff argued DE Progress should have sought to establish Weatherspoon as one of the three beneficiation sites as required by CAMA. *See* N.C. Gen. Stat. §130A- 309.216. If DE Progress had chosen Weatherspoon, the Public Staff contended, this would have allowed Duke Energy Carolinas ("DE Carolinas") to select a lower-cost closure option for its Buck Plant. Instead, Duke Energy chose the Buck Plant, along with the Cape Fear Plant and the H.F. Lee Plant, as a beneficiation site to install expensive ash processing equipment. The Public Staff also indicated that DE Carolinas, in response to data requests, stated that the Company could only obtain guaranteed commitments for 230,000 tons of Weatherspoon coal ash per year, as opposed to the 300,000 required by CAMA for the beneficiation option, and that the potential cost savings associated with selecting the Buck Plant for closure options other than beneficiation would have justified making additional efforts to identify additional sites for beneficial reuse of coal ash of the additional 70,000 tons of coal ash from Weatherspoon. NCUC Docket No. E-2, Sub 1142, Tr. Vol. 18, pp. 143-44.

Because no party other than the Public Staff commented on or took exception to DE Progress' proposed closure plans with respect to Weatherspoon, the majority opinion in the Commission's *Order Accepting Stipulation, Deciding Contested Issues, and Granting Partial Rate Increase,* issued on February 23, 2018 (*"DE Carolinas NCUC Order"*) did not address the Company's proposed cost recovery with respect to Weatherspoon. However, the Commission did fully address the reasonableness and prudence of DE Carolinas' selection of the Buck Steam Plant as one of three CAMA beneficiation sites in its *Order Accepting Stipulation, Deciding Contested Issues, and Requiring Revenue Reduction*, Docket No. E-7, Sub 1146 (June 22, 2018) ("*DE Carolinas NCUC Order*"). In the *DE Carolinas NCUC Order*, the Commission agreed with the DE Carolinas' decision to select the Buck Plant for installation of an onsite beneficiation project. *Id*. at 306-308. The Commission found that contrary to the Public Staff's position, the most reasonable reading of N.C. Gen. Stat. § 130A-309.206 is that the North Carolina General Assembly intended the Company install and operate technology to process and transform ash to a usable product rather than use the basic drying and screening methods such as those occurring at Weatherspoon. Therefore, because DE Progress' handling of Weatherspoon ash does not involve beneficiation processing or much of any processing beyond excavation, it would not satisfy the CAMA beneficiation requirement. Further, because the Public Staff concluded that the same beneficiation technology that will be used by DE Progress at the H.F. Lee Plant and the Cape Fear Plant that will be used at the Buck Plant is a reasonable and prudent "method of executing the requirements of CAMA," the Commission determined that the Public Staff could not credibly argue that the Company could have simply excavated, dried, and sold ash from Weatherspoon to comply with CAMA. *Id.* at 307.

Additionally, the Commission agreed with witness Kerin that because CAMA requires the installation of specific beneficiation technology, which costs approximately $181 million, it was reasonable for the Duke Energy to consider the amount of ash available at the site and the potential uses for the ash when making a decision to invest in beneficiation of a particular location. *Id*. at 308. Noting that Weatherspoon Plant has only 2.4 million tons of ash, approximately one-third of the amount located at the Buck Plant, the per-ton cost to process ash at the Buck Plant is significantly lower than it would be at Weatherspoon. The Commission also noted that due to the Weatherspoon Plant's poor geographic location in relation to the major markets for ash used in the cement industry, and because trucking the ash is part of the cost of the sales, Buck Plant's proximity to Charlotte and Greensboro additionally makes it a much better location for beneficiation, with the highest revenue projection, followed by the Cape Fear Plant and the H.F. Lee Plant. The Commission concluded that the Public Staff's proposal was not feasible as it would not satisfy the Company's statutory requirement to beneficiate ash, and that therefore, the Company's choice beneficiation closure plan at the Buck Plant, and thereby the closure plan for the Weatherspoon Plant, was reasonable and prudent. *Id.*